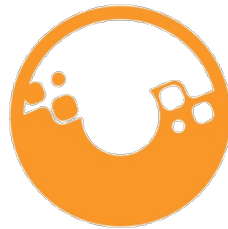


# Role of Livestock Methane Offsets in California's Cap-and-Trade Program



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AgSTAR 2013  
Indianapolis, Indiana  
June 11, 2013

Scott Hernandez  
Business Development  
Manager



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# Presentation Overview

1. Introduction to the Climate Action Reserve
2. Overview of California's Cap-and-Trade Program and the Role of the Reserve
3. Developing Compliance Offsets from Livestock Methane
  - Early Action Offsets (CAR Protocol)
  - Registry Offsets (ARB Protocol)





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# Legal Disclaimer:

Some of the content of this presentation is based on the Climate Action Reserve's understanding of the California Cap and Trade Regulation. As the implementation of the Regulation is the responsibility of the California Air Resources Board, you should be aware that anything presented here may be interpreted or applied differently by the Board.

Moreover, this presentation does not constitute legal advice. Information presented here should be regarded as guidance and does not have a legally binding effect.





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Introduction

# CLIMATE ACTION RESERVE



# Background



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- Chartered by California law in 2001 at the California Climate Action Registry
  - Previously known as California Climate Action Registry
  - Mission is to encourage voluntary actions to reduce emissions and to have such emissions reductions recognized
- In 2008, renamed and changed focus to creating a North American carbon offsets program
- Balances business, policy and environmental issues



# The Reserve: Who We Are and What We Do



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- Accredited offset project registry (OPR) under the California Cap-and-Trade Program
  - Mission: to promote the reduction of greenhouse gas emissions by pioneering credible market-based policies and solutions
- Serve compliance and voluntary carbon markets
- Reputation for integrity and experience in providing best-in-class registry services for voluntary and compliance offset markets



# Reserve Stats



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**CRTs registered** 37.2 million

**ARB-Eligible CRTs  
registered** 13.4 million

*CRTs retired* 6.5 million (~ 17%)

**Account holders** 330

**Projects submitted** 501

*Registered* 182

*Completed* 21

**U.S. States with  
Projects** 45





# Reserve Protocols



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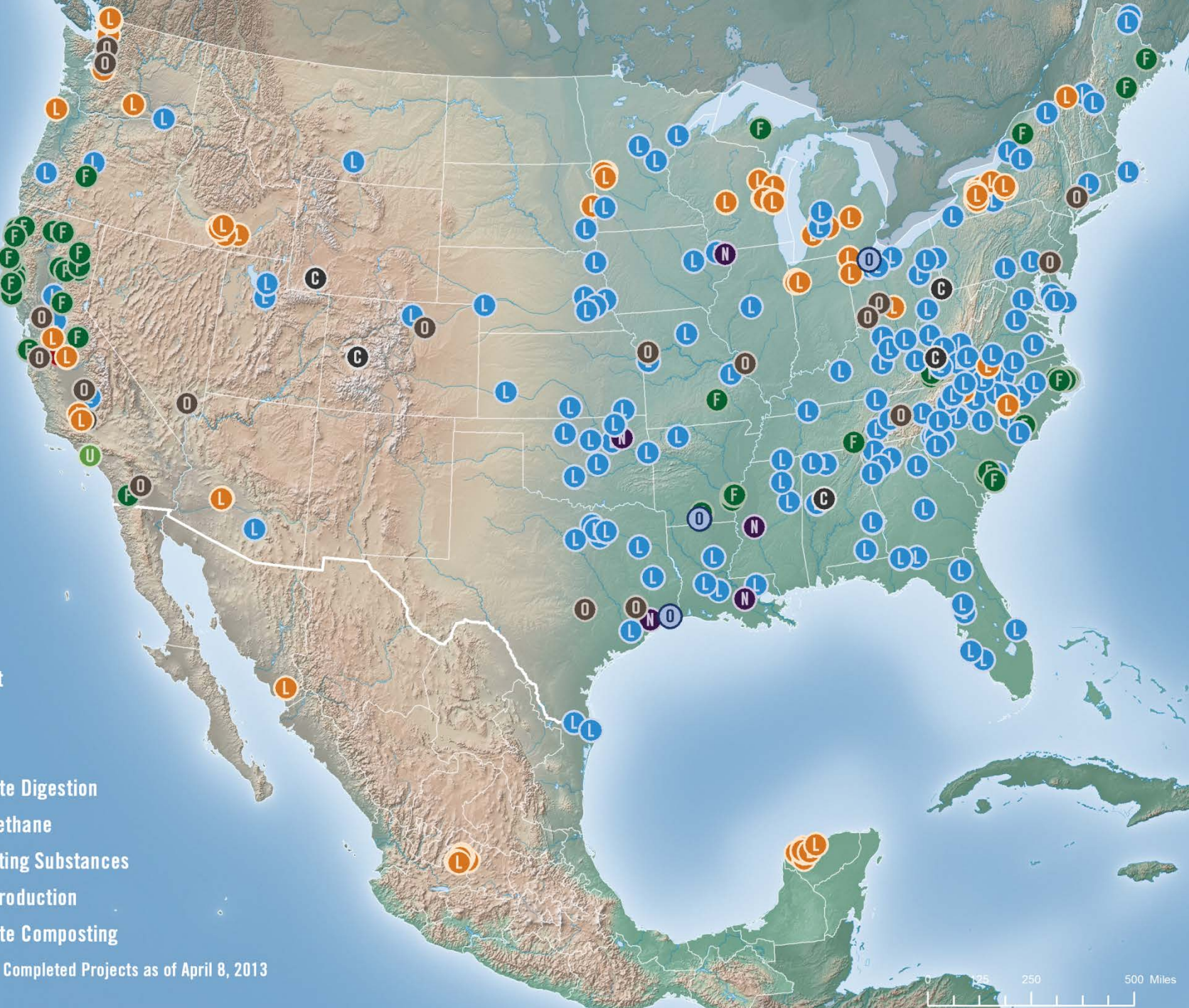
- Forestry (Reforestation, Improved Forest Management, Avoided Conversion)
- Urban Forestry
- Livestock Methane Capture
- Ozone Depleting Substances (US)
- Landfill Gas Capture
- Organic Waste Digestion
- Coal Mine Methane
- Nitric Acid Production
- Organic Waste Composting
- Rice Cultivation
- Nitrogen Management
- International: Mexico Livestock and Landfill; Article 5 ODS

Compliance  
Eligible

Protocols Under Development: Soil Carbon and Mexico Forestry







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- F** Forest
- U** Urban Forest
- L** Livestock
- L** Landfill
- O** Organic Waste Digestion
- C** Coal Mine Methane
- O** Ozone Depleting Substances
- N** Nitric Acid Production
- O** Organic Waste Composting

Listed, Registered & Completed Projects as of April 8, 2013





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Basics of Livestock Methane

# CARBON OFFSETS



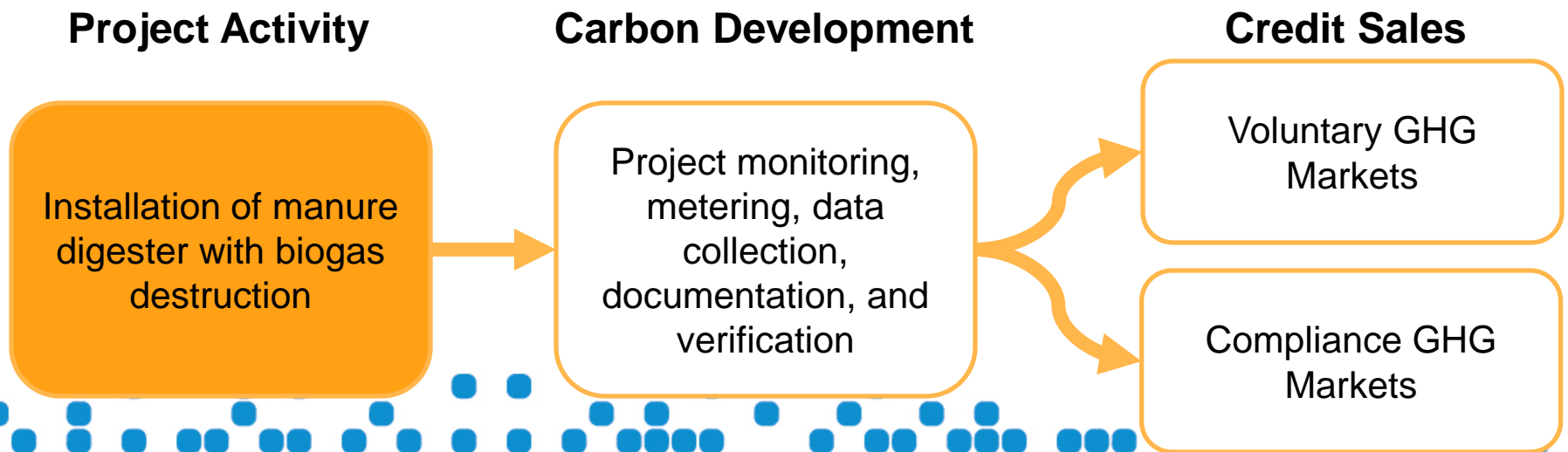


# Basics of Livestock Methane Offsets



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- The methane from anaerobic lagoons is a greenhouse gas (GHG) 21 times more potent than CO<sub>2</sub>
- The carbon markets function to pay dairy and swine farmers to capture and destroy that methane, keeping it out of the atmosphere





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# LIVESTOCK OFFSETS FOR COMPLIANCE IN CALIFORNIA



# ARB Livestock Project Protocol



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**Definition:** “installation of a biogas control system that captures and destroys methane gas from anaerobic manure treatment and/or storage facilities on livestock operations. The BCS must destroy methane gas that *would otherwise have been emitted to the atmosphere in the absence of the project from uncontrolled anaerobic treatment and/or storage of manure.*”

Source: California Air Resources Board





# Livestock Project Statistics



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Projects in progress: 111

Listed projects: 45

Registered projects: 39

Completed projects: 2

Total CRTs Registered: 1,191,957





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# Livestock Project Requirements:

- Installation of a biogas control system (BCS) at a dairy or swine operation where manure was previously managed through open, uncontrolled anaerobic storage (lagoon)
  - For new farms (“greenfields”), the project developer must demonstrate that common practice in their geographic area is anaerobic treatment of manure
- Includes centralized digesters, co-digestion
- Methane must be captured and destroyed
  - On-site: engine, fuel cell, turbine, flare
  - Off-site: pipeline injection, vehicle fuel



Ultimate Fate =  
Destruction of CH<sub>4</sub>



# Project Eligibility

## 1. Location

- U.S. and its territories (there is a version of the protocol available for Mexico as well)

## 2. Demonstrate anaerobic baseline conditions

## 3. Project start date

- No more than 6 months prior to project submittal
- Allow up to 6 month start-up period after methane destruction begins before defining the start date

## 4. Regulatory tests

- Must not be required by any legally-binding mandate at time project began
- Must be in compliance with applicable environmental regulations



# Quantification of Emission Reductions: Baseline & Metered



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Methane emissions are modeled and the amount of metered methane is quantified

BCS optimizes methane production, so baseline conditions must be modeled to avoid potential *over-crediting*

Credits issued for the lesser of the modeled and metered CH<sub>4</sub> reductions





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**Offset Markets Under California's Cap-and-Trade Program**

**THE NEW OPPORTUNITY**



# California Cap-and-Trade



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- State-wide cap on GHG emissions
- Program launched Jan 1, 2013 and runs through 2020
  - Divided into three compliance periods
  - Narrow scope for CP1: Large industrial emitters (power plants, refineries, cement plants, etc.)
  - Broad scope beginning Jan 1, 2015:
- Must have compliance instruments equal to your emissions for each year
  - Allowances: most allocated at the beginning, but auctioned in future years; issuance reduced annually
  - Offsets: can be used in place of allowances on a **limited basis**





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# Offsets for Compliance

- Compliance obligation can be fulfilled with a mix of allowances and offsets
- Up to 8% of compliance obligation can be fulfilled with offsets
  - Example: If your emissions are 1 million  $\text{mtCO}_2\text{e}$ , then you can use up to 80,000 offsets for that period
- Offsets must come from projects under CARB-approved protocols
  - Forestry, Urban Forestry, ODS, Livestock
- Project must be registered with a CARB-accredited offset project registry (OPR)



# The Role of Offset Project Registries (OPRs)



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- OPRs support ARB in the implementation of the cap and trade program by reviewing projects and issuing compliance eligible offset credits
- Must be converted to **ARB Offset Credits** (ARBOCs) in order to be used for compliance
- **Only** ARB has authority to issue ARBOCs







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# Reserve's Role as OPR

- The Reserve is accredited by ARB as an Offset Project Registry (OPR)
- Pre-screening projects for errors before they arrive at ARB and issuing Early Action Offset Credits and Registry Offset Credits

Provide Guidance on  
Protocols & Regulation  
Listing projects  
Conflict of Interest  
Assessment  
Review of Verification  
Documents  
Issuance of ROCs  
Project Audits



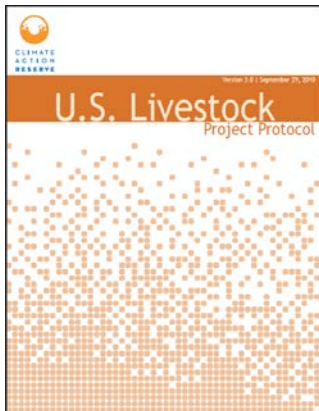
**“Registry  
Services”**



# Early Action vs. Registry Offset Credits



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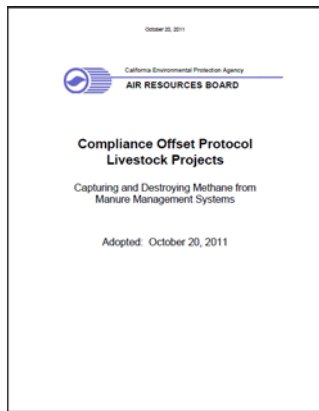
EAOCs = Projects listed under CAR Livestock Protocol

- Protocol Versions 1.0 through 3.0;
- Vintage 2005-2014
- Listed before January 1, 2014

ROCs = Projects listed under ARB Livestock Protocol

All projects must transition to ARB's protocol by February 28<sup>th</sup> 2014

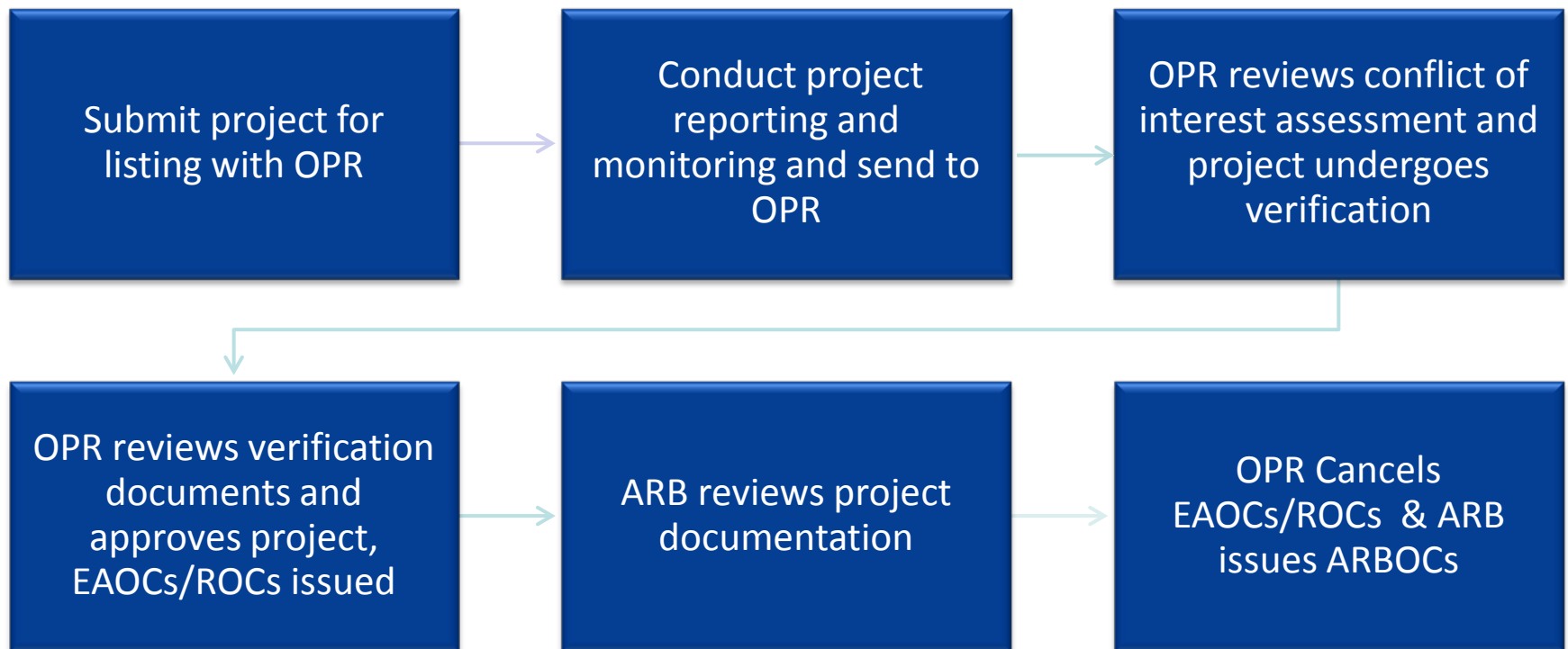
- Silver-lining = restarts the crediting period` (10 yrs)



# Overview of Process for the Issuance of ARBOCs



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# Listing Projects with ARB

- All projects must apply to California's Air Resources Board (ARB) before receiving compliance offsets
- ARB will review Data Reports, Verification Statements, project documents and make a final determination prior to issuing ARB Offset Credits
  - Can request more information or a full regulatory verification
- Currently there are 45 Early Action Projects listed on ARB's Offsets website
  - Issuance of first ARBOCs expected summer 2013





Monday, June 10, 2013

This page last reviewed June 5, 2013

## Early Action Offset Projects

ARB Project ID #	Offset Project Name	Listing Entity	Type of Project	Early Action Offset Program Project ID*	Reporting Period(s) Listed	Early Action Listing
CALS0020	Bridgewater Dairy LLC	Camco International Group, Inc.	Livestock	<a href="#">CAR474</a>	04/01/10-03/31/11 04/01/11-03/31/12	<a href="#">PDF</a>
CALS0021	Willow Point Dairy, LLC	Camco International Group, Inc.	Livestock	<a href="#">CAR463</a>	04/01/10-03/31/11 04/01/11-03/31/12	<a href="#">PDF</a>
CAOD0022	DPC Domestic ODS Destruction Project #10	Diversified Pure Chem, LLC	Ozone Depleting Substances	<a href="#">CAR975</a>	11/04/12-11/09/12	<a href="#">PDF</a>
CALS0023	Fair Oaks Dairy Farm LLC Cyclus-Designed Digester	Camco International Group, Inc.	Livestock	<a href="#">CAR477</a>	09/01/11-08/31/12	<a href="#">PDF</a>
CALS0024	Fair Oaks Dairy Farm LLC GHD-Designed Digester	Camco International Group, Inc.	Livestock	<a href="#">CAR478</a>	01/01/11-08/31/11 09/01/11-08/31/12	<a href="#">PDF</a>



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# Invalidation & Buyer Liability

- **CARB may find that an offset is invalid if**
  - Amount of credits is overstated by more than 5%
  - Project is not in accordance with all local, state, and national environmental, health and safety regulations during reporting period
  - Credits have been issued by another program for the same period
- **If found invalid, CARB will remove the offsets from the account where they are currently located, whether retired or active**
  - Buyer/Holder responsible for replacing invalidated credits
  - Has created uncertainty and low volumes in the market







# Invalidation Time Frame

CARB can find credits invalid within eight years, except for the following:

- Invalidation risk can be shortened to three years if the project is verified by a different verifier within three years.

Therefore, it's important to work with reputable partners who know the protocols.





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In Conclusion

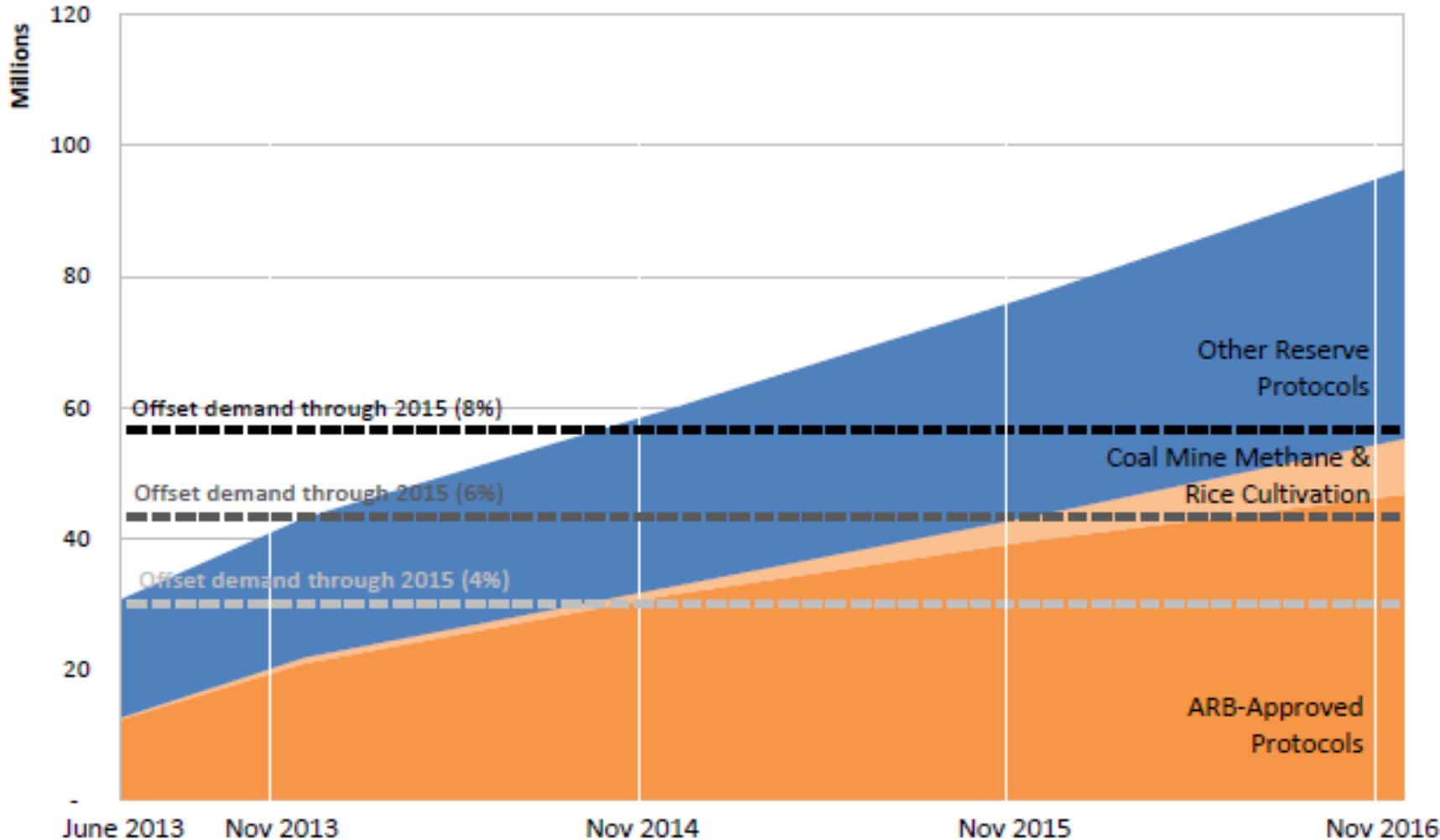
# THE BIG PICTURE





# Projections of Future Combined CRT & ROC Issuance

May 20, 2013





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# Bottom Line

- There will be a significant demand for offsets
- Supply will be tight
  - constrained by long lead-times and limited number of project types that are accepted
- **Livestock projects can expect steady demand and rising prices**



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**CALIFORNIA AIR RESOURCES BOARD (ARB)**

**HTTP://WWW.ARB.CA.GOV/CC/CAPANDTRADE/CAPANDTRADE.HTM**

**ARB EARLY ACTION PROJECTS**

**HTTP://WWW.ARB.CA.GOV/CC/CAPANDTRADE/OFFSETS/EARLY ACTION/PROJECTS.HTM**